



Lansing State Journal
Tuesday, February 5, 2008

Granholtz said using landfills to create energy is a great way to reduce reliance on coal and, eventually, on gasoline for vehicles.

"We want to make sure that we lead the nation in alternative energy solutions," Granholtz said. "Granger here in Lansing is leading the way in Michigan to show us how we can convert trash into energy."



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Granger

Renewable Portfolio Standard

The proposed RPS calls for:

- ❑ 10% by 2015 or ~2,000 MW
 - Electricity from renewable resources
 - Electricity from Michigan resources

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Growing demand

- ❑ BWL & Granger new power purchase agreement
- ❑ Moves BWL toward target of 7% by 2016
- ❑ 6.4 MW to be available by end of 2008.
- ❑ Up to 5.6 MW more to be installed by 2028.
- ❑ Projected total of 12 MW from Wood Street facility



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The energy question

Would an exemption to the existing yard waste ban increase renewable energy production from landfill gas in Michigan?

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Examining Increased Renewable Energy Production from Landfill Gas in Michigan

June 2007 (with January 2008 addendum)

*Prepared for Granger by Public Sector Consultants Inc. with
technical analysis by NTH Consultants*

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TODAY MICHIGAN LANDFILLS PRODUCE 80 MW OF ENERGY

ACTIVE LANDFILL FACILITIES

Current Major Facilities

1. Adrian Landfill
2. Autumn Hills
3. C&C
4. Carleton Farms
5. Citizens Disposal
6. Eagle Valley
7. Forest Lawn
8. Granger Grand River
9. Granger Wood Street
10. Oakland Heights
11. Ottawa County Farms
12. Peoples
13. Pine Tree Acres
14. Riverview
15. Sauk Trail
16. Venice Park
17. Veolia ES Arbor Hills
18. Vienna Junction
19. Westside
20. Woodland Meadows

Potential Major Facilities

1. Central
2. City Environmental of Waters
3. City of Midland
4. Glens
5. Manistee County
6. Michigan Environs
7. Northern Oaks
8. Orchard Hills
9. Smiths Creek
10. South Kent
11. Southeast Berrien County
12. Whitefeather

Excluded – Less Than 1.6 MW

1. City Environmental of Hastings
2. Collier Road
3. Marquette County
4. McGill Road
5. Osceola Development
6. Tri-City
7. Wexford

Excluded – Lack of Data

1. Brent Run
2. County of Muskegon
3. Cove
4. Delta County
5. Dafter
6. Elk Run
7. K and W
8. Montmorency-Oscoda-Alpena
9. Pitsch
10. Richfield
11. Wood Island

Study methodology EPA LandGEM Model

☐ Baseline Assumptions

- Landfill site specific data
- Methane Generation Rate ($k=0.05 \text{ year}^{-1}$)
- Methane Content (54%)
- Potential Methane Generation Capacity ($L_0=100 \text{ m}^3/\text{Mg}$)

☐ Projection Assumptions (yard waste added)

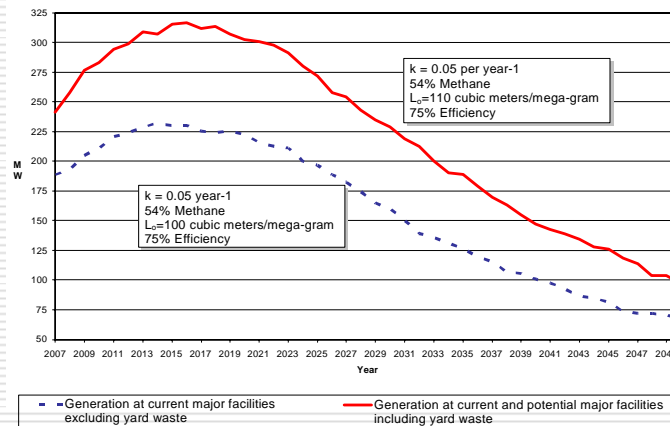
- Yard waste volumetric increase (10%)
- Potential methane generation capacity ($L_0=110 \text{ m}^3/\text{Mg}$)

☐ Conversion of landfill gas to electrical power for uniform comparison

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Energy-production capacity, including and excluding yard waste



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Michigan's LFG energy potential

- 200+ MW with projects fully developed
 - ~127,000 homes
- 300+ MW adding yard waste exemption
 - ~200,000 homes

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Meeting the proposed RPS will require about 2,000 MW of electricity from renewable sources. Right now landfill gas-to-energy provides 80 MW or 4% so any increase moves us closer to the goal.

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Energy Comparison

Power Source Example	MW Capacity	Industry Average Capacity Factor (productivity)	Average # Houses Powered
Coal (Ex. BWL Eckert near downtown Lansing)	351 MW	60-80%	~214,000
Landfill Gas (All 32 projects in MI fully developed and exemption for yard waste)	300 MW	80-95% Granger facilities run at 97-99%	~191,000
Wind (Harvest Wind Farm in Huron County 32 wind turbines)	52.8 MW	25-40%	~15,000

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Recycling yard waste can yield **TWO OPTIONS**



- A soil amendment through composting

DIRT



- A renewable energy resource from landfill gas recovery

POWER

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GRANGER

GOAL

An **EXEMPTION** to the yard waste ban for facilities meeting the criteria of a landfill energy production facility (LEPF).

This is a request for a specific exemption to exist with the current and only management option of composting. It is not an attempt to repeal current law.

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GRANGER

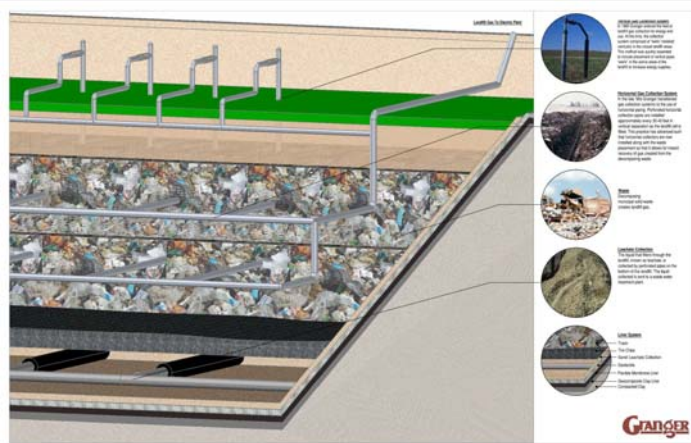
Landfill Energy Production Facility (LEPF)

- ☐ Operable gas collection system with 70% efficiency
- ☐ Gas used for energy purpose
- ☐ Annually report recovery and use to State and county waste authority
- ☐ Meeting the above criteria provides for a "term" of landfill license

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Immediate capture



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Emissions reduction

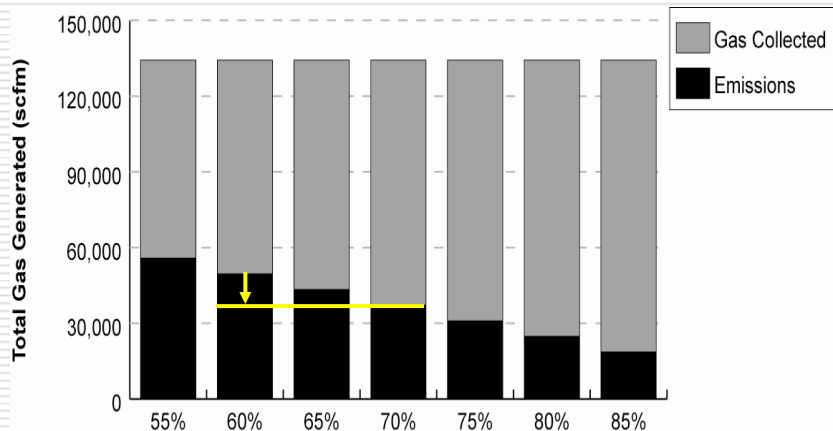
- Using landfill gas to produce energy according to U.S. EPA is beneficial.
 - Significantly reduce methane emissions
 - Avoids use of fossil fuels such as coal and oil

Requiring a collection efficiency of 70% would adequately protect against additional emissions resulting from the acceptance of yard waste.

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Proportion of Landfill Gas Emitted Statewide at Increasing Collection Efficiency, 2015, with the Addition of Yard Waste



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Landfill capacity

- Yard waste (as landfill biomass) does not significantly limit overall landfill capacity; it loses half of its weight and 50 to 75 percent of its volume from decomposition.
- Granger Wood Street Case Study
 - Calculated ~4 years less capacity
 - Calculated ~century more energy

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Production benefits

- 24/7/365 base load capacity
- Reliable and available
- Immediate source with no reserve capacity requirements
 - Hydro and landfill gas, right now, are the only renewables that can off-set conventional energy sources.
- Long-term source – landfills produce gas at least 20-30 years post-closure

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OBJECTIVES

- ☐ Increased renewable energy production
- ☐ Additional use of yard waste
- ☐ Better landfill management
 - Odor control
 - Advance gas capture
 - Emission controls

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Status

- ☐ SB864 introduced by **Senator Patty Birkholz** referred to *Energy Policy and Public Utilities Committee*
 - Part of the "Green Michigan Initiative"
- ☐ Sub language with specific criteria suggested

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